

Kharrazi, M., T. Lomas, R. Broadwin and M. Armstrong (1994). Analysis of a cluster of adverse pregnancy outcomes in Walnut, California, California Department of Health Services.

EXECUTIVE SUMMARY

Introduction:

In an ongoing study of pregnancy outcomes around the B.K.K. Landfill in West Covina, California, high rates of adverse pregnancy outcomes were observed approximately two miles southeast of the landfill in the City of Walnut in the early 1980s (Figure A). The City of Walnut requested information on whether emissions from the B.K.K. landfill or from some other source(s) might be related to these excesses and whether a health hazard might exist if vacant land directly east of the landfill was developed.

Objectives:

The objectives of this report are to describe the characteristics of excess newborn death and very low birth weight infants observed in areas of Walnut in order to identify possible reasons for these excess cases, and to provide recommendations on additional information that are needed to more adequately assess the future health and nuisance risk to individuals who might live in the proposed development area east of the B.K.K. Landfill.

Study Population:

Available 1978-86 California State birth cohort files were used to identify live births, stillbirths and infant deaths born to women in three geographic areas of Walnut (N=1,359) and in a large comparison area west, north and south of Walnut (N=25,394).

Methods:

The rates of a number of adverse pregnancy outcomes in the three Walnut areas were described in terms of person, place and time, and compared to rates in the comparison area. Multivariate statistical methods were used to control for the effects of potential confounding factors which varied across the different study areas. The high rates in certain areas were examined to determine whether they corresponded with specific time periods, residence locations, personal attributes, and/or medical factors.

Results:

Elevated rates of a number of adverse pregnancy outcomes were observed in different parts of Walnut at different time periods in the early 1980s. These included: six newborn (early neonatal) deaths in the South Walnut area conceived in 1983 when 0.3 were expected (Figure B); six infant deaths and five very low birth weight infants in the North Walnut area conceived in 1983-85 when 1.0 and 1.1 were expected, respectively; and four stillbirths (fetal deaths) in the rest of Walnut area were conceived in 1985 when 1.2 were expected. Elevated rates were isolated to short time periods (1-3 years) and have returned to background levels in the latest year for which we have geocoded data (1986).

Discussion:

In the North Walnut area, the higher rate of infant deaths occurred amidst a dearth of stillbirths,

and conversely, in the rest of Walnut area, the higher rate of stillbirths occurred amidst a dearth of infant deaths. Because fetal and infant deaths can share many of the same causes, this leaves open the possibility that there has been a shifting in deaths between the fetal and infant periods in these areas and the excesses may not be real. It has been more difficult to find an explanation with the limited data available for the larger excess of newborn deaths to births conceived in 1983 in the South Walnut area. It is unlikely that landfill gas emissions from the B.K.K. Landfill provide a viable explanation for the excess because this area is not in a probable wind drainage or odor complaint area, and areas in Walnut closer to the landfill (less than 2 miles) do not show high rates of adverse outcomes. With the help of City of Walnut officials, a search for other landfill or industrial pollutant sources in this largely residential area was made, but none were found. Because the excesses we have identified were based on small numbers of events, random variability may also play a role.

Conclusions and Recommendations:

The information on clusters of adverse pregnancy outcomes in the 1980s is not particularly helpful in making a decision on developing vacant land east of the B.K.K. landfill in the 1990s. Instead, we recommend that development decisions be based upon such factors as the possibility of persistent odor complaints, ambient air monitoring for carcinogens, and resulting excess theoretical lifetime cancer risk estimates. Past odor studies suggest that if people had been living to the east within approximately 1 1/4 mile of the landfill in the early to mid-1980s, they would have complained of landfill odors (Figure C). We understand that chemical emissions from the site have decreased substantially since that time, but because of the patterns of prevailing winds, the area to the east of the landfill may still receive higher ambient air exposures from these now much lower emissions compared to other areas. There has been limited air monitoring to the east of the landfill to quantify what these exposures, if any, would be. It should be noted that excess lifetime cancer risk assessments around the B.K.K. site are being updated to reflect the current higher potency of vinyl chloride. Therefore, we recommend that as a condition of development, the following steps be taken to assess the potential health and nuisance risks to persons who might one day live in that area: (i) recent data on odor complaints around the landfill be analyzed, (ii) a long-term (i.e., one year) and comprehensive (i.e., multiple chemical) ambient air monitoring program be instituted in the proposed development area, (iii) an analysis be carried out of any potential for exposure to landfill emissions to increase from their current levels over the next several decades via possible exposure pathways including soil gas migration, and (iv) forthcoming estimates from the Office of Environmental Health Hazard Assessment in the California Environmental Protection Agency be utilized of the excess theoretical cancer risk of vinyl chloride emissions from the B.K.K. landfill. Although the California Department of Health Services does not have the resources to provide these services, we could provide oversight to a qualified contractor who did this work. This additional information should provide a more thorough basis than that currently available for decision-making on issues relating to development adjacent to the B.K.K. Landfill in Walnut.